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10/601,994	06/23/2003	Thomas Hathaway	3562-000032	8671

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EXAMINER	
CORRIGAN, JAIME W	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/601,994	HATHAWAY ET AL.	
	Examiner	Art Unit	
	Jaime W Corrigan	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-61 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,8-10,13-16,19,21-31,34,36-47,49-58,60 and 61 is/are rejected.

7)☒ Claim(s) 4-7,11,12,17,18,20,32,33,35,48 and 59 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2-13-04, 10-2-03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 22, line 8, It is unclear to the examiner what the meaning of "noteworthy" is. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 8-10, 13-16, 19, 21-31, 34, 36-47, 49-58, 60-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Seccombe et al. (PN 3,988,925).

Regarding claim 1 Seccombe discloses valve lash lock nut-driving system (See Figure 1 (30), (37), (12)) movable in a valve lash lock nut tightening direction and an opposite valve lash lock nut loosening direction (See Column 2 Lines 58-68, Column 3 Lines 1-8); a valve lash adjusting screw-driving system (See Figure 1 (50), (54), (55) (60)) operable in a valve lash adjusting screw advancing direction and a valve lash adjusting screw retracting direction; at least one sensor (See Figure 1 (80), (82)) operable to sense a value indicative of valve opening movement; and a controller connected to the valve lash lock nut-driving system, the valve lash adjusting screw-driving system and the sensor; the controller (See Column 6 Lines 42-52) being operable to automatically move the valve lash lock nut-driving system and the valve lash adjusting screw-driving system until a desired valve lash gap is set without requiring the systems to set a valve lash adjusting screw to an initialized and true zero valve lash position (See Column 4 Lines 48-61).

Regarding claim 2 Seccombe discloses a rotatable rocker arm (See Figure 1 (4)); a threaded valve lash adjusting screw (See Figure 1 (9)) coupled to the rocker arm; and a valve lash lock nut (See Figure 1 (12)) coupled to the valve lash adjusting screw, longitudinal (See Column 2 Lines 58-68, Column 3 Lines 1-20) positioning of the valve lash lock nut relative to the valve lash adjusting screw operably setting a valve lash gap of the rocker arm (See Column 5 Lines 10-32).

Regarding claim 3 Seccombe discloses the valve lash lock nut-driving (See Figure 1 (30), (37), (12)) system automatically rotates in the valve lash lock nut tightening direction to engage the valve lash lock nut; the valve lash lock nut-driving system thereafter continues (See Column 2 Lines 58-68, Column 3 Lines 1-8) rotating the valve lash lock nut in the valve lash lock nut tightening direction; and secondly, the valve lash adjusting screw-driving system (See Figure 1 (50), (54), (55) (60)) is automatically rotated in the valve lash adjusting screw advancing direction.

Regarding claims 8, 14 Seccombe discloses the controller automatically inspects the valve lash setting to determine if a desired valve lash value has been obtained through prior automatic adjustment (See Column 5 Lines 10-32).

Regarding claim 9 Seccombe discloses the controller automatically causes selective rotation of the valve lash lock nut-driving system and the valve lash adjusting screw-driving system in order to readjust the valve lash setting if the controller determines that the lash verification measurement is undesirable (See Column 4 Lines 49-68, Column 5 Lines 1-10).

Regarding claims 10, 16, 31, 47, 53 Seccombe discloses the controller automatically sends an error signal and stops setting the valve lash if multiple valve lash adjustments and verification determinations are performed, and the valve lash adjustment continues to be unacceptable (See Column 5 Lines 10-32).

Regarding claim 13 Seccombe discloses a valve lash fastener-driver (See Figure 1 (30), (37), (12)); a valve lash adjusting member-driver (See Figure 1 (50), (54), (55) (60)); a valve lash measurer (See Figure 1 (80)); and a controller (See Column 6 Lines 46-52) connected to and operably controlling movement of the fastener-driver, member-driver and valve lash measurer; the controller operably adjusting (See Column 3 Lines 8-Column 5 Lines 1-40) valve lash by selectively energizing and deenergizing the fastener-driver and member-driver; and the controller operably verifying (See Column 3 Lines 30-45, Column 4 Lines 48-68, Column 5 Lines 1-10) the actually adjusted valve lash in an automatic manner based at least in part on the valve lash measurer output signal.

Regarding claim 15 Seccombe discloses the controller automatically causes selective rotation of the fastener-driver and the member-driver in order to readjust the valve lash setting if the controller determines that the verification calculation is undesirable (See Column 4 Lines 48-68, Column 5 Lines 1-9).

Regarding claim 19 Seccombe discloses a probe (See Figure 1 (81)) operably contacting at least one of: a valve assembly component (See Figure 1 (7)) and a rocker arm; an automatically actuated plunger (See Figure 1 (70)) operably moving the rocker arm in a direction toward a valve stem; and a valve lash measurer operably sensing distance displacement of the rocker arm through the probe (See Column 3 Lines 29-45).

Regarding claim 21 Seccombe discloses the valve lash measurer ascertains valve lash gap displacement (See Column 3 Lines 21-45).

Regarding claim 22 Seccombe discloses a valve lash adjusting screw-rotator (See Figure 1 (50), (54), (55) (60)); a valve lash monitor (See Figure 1 (80); and an electronic control unit (See Column 6 Lines 42-52) operably communicating with the valve lash adjusting screw-rotator and the valve lash monitor; the control unit operably adjusting (See Column 3 Lines 9-45) valve lash at least in part through energization of the valve lash adjusting screw-rotator; the control unit operably using a point of noteworthy change in a set of actual (See Column 4 Lines 49-68, Column 5 Lines 1-9) sensed values; the control unit thereafter operably causing the valve lash adjusting screw-rotator to rotate an additional predetermined amount to a valve actuating mechanism preloaded position (See Column 4 Lines 49-68, Column 5 Lines 1-40); and the control unit subsequently operably causing the valve lash adjusting screw-rotator to set the desired valve lash (See Column 4 Lines 49-68, Column 5 Lines 1-40).

Regarding claims 24, 34 Seccombe discloses a probe (See Figure 1 (55)) adapted to operably contact a rocker arm (See Figure 1 (4)) and an automatically actuated plunger (See Figure 1 (70)) adapted to operably move the rocker arm in a direction toward a valve stem, the valve lash monitor operably sensing displacement distance of the rocker arm through the probe (See Figure 1 (55)).

Regarding claim 25 Seccombe discloses a valve lash lock nut-rotator (See Figure 1 (30), (37), (12)) including a first automatic motor (See Figure 1 (30)) and a valve lash lock nut-engaging socket (See Figure 1 (30), (37), (12)), wherein the valve lash adjusting screw-rotator (See Figure 1 (50), (54), (55) (60)) includes a second automatic motor (See Figure 1 (50)) and a valve lash adjusting screw-engaging bit (See Figure 1 (50), (54), (55) (60)).

Regarding claim 26 Seccombe discloses the set of actual sensed values is based on sensed displacement values versus valve lash adjusting screw angle of rotational values (See Column 3 Lines 9-68, Column 4 Lines 1-68, Column 5 Lines 1-9).

Regarding claim 27 Seccombe discloses the set of actual sensed values is based on sensed torque values versus valve lash adjusting screw angle of rotational values (See Column 3 Lines 9-68, Column 4 Lines 1-68, Column 5 Lines 1-9).

Regarding claim 28 Seccombe discloses the control unit operably uses a point of sudden change in the set of actual sensed values as the point of noteworthy change, calculated at least in part with input from the valve lash monitor, as an initialization starting point (See Column 3 Lines 9-68, Column 4 Lines 1-68, Column 5 Lines 1-9).

Regarding claim 29 Seccombe discloses a tool comprising a first (See Figure 1 (30), (37), (12)) automatic rotator and a second (See Figure 1 (50), (54), (55) (60)) automatic rotator selectively energizable to set valve lash; and a verifier (See Figure 1 (80), (82)) operable to verify the actual valve lash; the verifier automatically causing selective energization (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31) of at least one of the rotators if it is determined that the verification reading is undesirable.

Regarding claim 30 Seccombe discloses the verifier comprises an electrical controller (See Column 6 Lines 42-52) connected to the rotators See Figure 1 (30), (37), (12)).

Regarding claim 36 Seccombe discloses the verifier comprises a plunger which is automatically advanced, and an angle of rotation of the first rotator is measured, after a sudden point of change in displacement versus angle data is determined in order to verify the valve lash setting (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 37 Seccombe discloses a rocker arm (See Figure 1 (4)); the verifier comprising a plunger (See Figure 1 (70)); the tool having at least one spring (See Figure 1 (71)); and the first rotator (See Figure 1 (30), (37), (12)) being rotated an angular amount to set valve lash; thereafter, the valve lash being subsequently verified by retracting the previously advanced plunger and

biasing the rocker arm toward the valve lash adjusting screw by the at least one spring, and measuring displacement of the rocker arm with the verifier (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 38 Seccombe discloses an engine valve assembly including a valve stem (See Figure 1 (5)), a biasing (See Figure 1 (6)) member and a retainer (See Figure 1 (7)) operably coupling the biasing member to the valve stem; a rocker arm (See Figure 1 (4)) contactable against the valve assembly; an adjuster (See Figure 1 (30), (37), (12)) moveable to cause different valve lash settings, the adjuster being coupled to the rocker arm (See Figure 1 (30), (37), (12), (4)); a driver (See Figure 1 (30)) operably moveable to engage the adjuster and automatically move the adjuster to a desired valve lash setting position; a first measurer (See Figure 1 (82)) operably moveable in an automatic manner to directly contact against the valve assembly; a second measurer (See Figure 1 (70)) operably moveable in an automatic manner to directly contact against a portion of the rocker arm adjacent the valve assembly; and a controller (See Column 6 Lines 42-52) automatically determining the valve lash based on at least the differences in displacement of the first and second measurers.

Regarding claim 39 Seccombe discloses the controller is connected to the measurers (See Figure 1 (70), (82)) and the driver; the driver (See Figure 1 (30)) is part of a factory-mounted machine and includes an automatically powered actuator; and the valve assembly, rocker arm and adjuster are part of

an internal combustion engine, and multiple engines (See Abstract) each have their valve lash set by the machine; and the system does not need to set and determine the actual zero (See Column 4 Lines 48-61) initialization position of a valve lash adjustment screw.

Regarding claim 40 Seccombe discloses each of the measurers (See Figure 1 (70), (82)) include a linearly moveable probe (See Figure 1 (70), (82)), an automatic actuator (See Figure 1 (71), (80)) and a sensor (See Column 6 Lines 42-52).

Regarding claim 41 Seccombe discloses the measurers (See Figure 1 (70), (82)) are extendable in substantially parallel directions free of rotating components.

Regarding claim 42 Seccombe discloses a locking nut rotator (See Figure 1 (30), (37), (12)) automatically controlled by the controller, and the driver (See Figure 1 (30)) being operable to rotate the adjuster which is an externally threaded, valve lash adjusting screw (See Figure 1 (9)).

Regarding claim 43 Seccombe discloses the controller (See Column 6 Lines 42-52) automatically verifies (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31) if a desired valve lash setting is obtained.

Regarding claim 44 Seccombe discloses (a) sensing values associated with valve lash adjusting screw rotation as a function of at least one of: (i) valve lash adjusting screw torque, (ii) valve displacement (See Figure 1 (82)), and (iii) rocker arm displacement (See Figure 1 (70)); (b) inputting a precursor value based on at least one of (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31): (i) a change point of at least a predetermined variation in the sensed values (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31), and (ii) a predetermined threshold value (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); (c) using the precursor value as the initialized starting point for subsequent movement setting when adjusting valve lash adjusting screw rotation (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); and (d) automatically adjusting the valve lash at least in part by adjusting valve lash adjusting screw rotation (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 45 Seccombe discloses comprising automatically verifying the actual valve lash adjustment and determining if the actual adjusted valve lash measurement is acceptable (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 46 Seccombe discloses the valve lash is automatically adjusted a second time if the verified actual valve lash value is not acceptable (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 49 Seccombe discloses the valve lash adjusting screw torque is used as one of the sensed values (See Column 5 Lines 41-59).

Regarding claim 50 Seccombe discloses the valve displacement is used as one of the sensed values (See Column 3 Lines 21-45).

Regarding claim 51 Seccombe discloses rocker arm displacement is used as one of the sensed values (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 52 Seccombe discloses a method of using a machine to set valve lash by adjusting at least first and second members (See Figure 1 (9), (12)) associated with an engine valve having a biasing device, the method comprising: (a) automatically rotating the first member (See Column 2 Lines 44-49); (b) automatically rotating the second member (See Column 2 Lines 65-68); (c) automatically compressing the biasing device (See Figure 1 (6)) in a temporary manner; (d) automatically determining if the actual adjustments to the first and second members provided a desired result with the engine valve (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); and (e) automatically readjusting (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31) the first and second members if it is determined in step (d) that the actual adjustments did not provide the desired result.

Regarding claim 54 Seccombe discloses the automated i and sequential steps of at least:

(a) backing off the first member, which is a nut, from the second member, which is a threaded valve lash adjusting screw, while deterring the valve lash adjusting screw from moving (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31);

(b) setting the valve lash adjusting screw to a valve actuating mechanism preloaded position (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31);

(c) setting the valve lash by further rotating the valve lash adjusting screw (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31);

(d) deterring rotation of the valve lash adjusting screw while the nut is tightened (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); and

(e) performing the valve gap determination step to verify the setting (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31).

Regarding claim 55 Seccombe discloses comprising setting the valve lash without any one of: (a) setting an initial true zero lash position for a valve lash adjusting screw or the valve (See Column 4 Lines 48-61); and (b) determining an initial true zero lash position (See Column 4 Lines 48-61) for a valve lash adjusting screw or the valve prior to valve lash adjusting screw movement by the machine.

Regarding claim 56 Seccombe discloses (a) sensing values associated with valve lash adjusting screw rotation as a function of at least one of: (i) valve lash adjusting screw torque, (ii) valve displacement, and (iii) rocker arm displacement (See Figure 1 (70)); (b) inputting a precursor value based on at least one of: (i) a change point of at least a predetermined variation in the sensed values (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31), and (ii) a predetermined threshold value (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); (c) using the precursor value as the initialized starting point for subsequent movement setting when adjusting valve lash adjusting screw rotation (See Column 3 Lines 21-68, Column 4 Lines 49-68, Column 5 Lines 1-31); and (d) determining if a faulty valve seating condition exists (See Column 6 Lines 24-31).

Regarding claim 57 Seccombe discloses automatically verifying the actual valve lash adjustment and determining if the actual adjusted valve lash value is acceptable (See Column 4 Lines 49-68, Column 5 Lines 1-20).

Regarding claim 58 Seccombe discloses the valve lash is automatically adjusted a second time if the verified actual valve lash value is not acceptable (See Column 4 Lines 49-68, Column 5 Lines 1-32).

Regarding claim 60 Seccombe discloses the faulty valve seating condition is caused by an improperly bent valve stem (See Column 6 Lines 24-31).

Regarding claim 61 Seccombe discloses sending an output signal indicative of the faulty valve seating condition different than an output signal indicative of other conditions (See Column 4 Lines 54-68, Column 5 Lines 1-9).

Allowable Subject Matter

Claims 4-7, 11-12, 17-18, 20, 32-33, 35, 48, 59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mendler (PN 5,445,117), Barone et al. (PN 5,450,772) disclose similar valve lash adjusting devices.

Any inquiry concerning this communication from the examiner should be directed to Examiner Jaime Corrigan whose telephone number is (703) 308-2639. The examiner can normally be reached on Monday - Friday from 8:30 a.m. – 6:00 p.m. 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (703) 308-2623. The fax number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.

JC

Jaime Corrigan
Patent Examiner

June 27, 2004

Art Unit 3748

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